

**Washington State Department of Transportation
Research Program
2003 – 2005 Work Program**

Research

***Bridge & Structures Research Area
Project Manager: K. Anderson***

**Objectives
and Functions**

Identify, investigate, and provide coordination of transportation research projects contributing to the design, construction, preservation, safety, and maintenance of bridges and structures.

**Accomplishments
2001 – 2003 Biennium**

Projects funded during the biennium were:

Item Number	Project Title	Funding Source	Total Project Cost	Prior Period s	Estimated 01-03	Planned 03-05	Beyond 03-05
02-052	Rapid Processing and Transmission of WSDOT – Specific Shakemaps	RES	45,000	0	10,000	35,000	0
02-225	Reliability Based Seismic Retrofit	RES	75,000	0	55,000	20,000	0
00-301	AW (Alaskan Way) Instrument System	RES	69,003	57,203	11,800	0	0
00-302	Floating Bridge Anchor Cable Load Verification	RES	136,352	85,900	50,452	0	0
00-304	Emergency Bridge Repair for Earthquake Damage	RES	51,505	32,763	18,742	0	0
00-305	Behavior and Design of Joint Regions	RES	150,000	0	60,000	90,000	0
00-307	Push-Over Analysis	RES	49,833	33,278	16,555	0	0
02-308	Cotton Duck Bearing Pads	RES	45,000	0	40,000	5,000	0

Proposed Activities
2003 – 2005 Biennium

The projects proposed for the biennium are:

Item Number	Project Title	Funding Source	Total Project Cost	Planned 03-05	Beyond July 1, 2005
04-050	Precast Systems for Rapid Construction of Bridge Substructures	RES	70,000	70,000	0
04-051	Precast Concrete Bridge Deck for Rapid Construction	RES	75,000	15,000	60,000
04-053	Design, Fabrication, and Construction of Long-Span Prestressed Girder Bridges	RES	75,000	8,000	67,000
04-054	Seismic Assessment and Retrofit of Existing Multi-Column Bent Bridges	RES	90,000	90,000	0
04-055	Alternatives to Timber as a Construction Material for Terminal Structures	RES	100,000	50,000	50,000
04-056	WSU Researchers Access to Tacoma Narrows Bridge Project	RES	10,000	10,000	0

Estimated Costs

	2001 – 2003	2003 – 2005
RES	\$ 210,039	\$ 314,400
MVF	52,510	78,600
Other	<hr/>	<hr/>
	\$ 262,549	\$ 393,000

Research

Environment in Transportation Research Area

Project Manager: J. Toohey

Objectives and Functions

Identify, investigate, and provide coordination of all research projects dealing with the potential environmental impact of state owned transportation facilities.

Accomplishments 2001- 2003 Biennium

Projects funded during the
biennium were:

Item Number	Project Title	Funding Source	Total Project Cost	Prior Periods	Estimated 01-03	Planned 03-05	Beyond 03-05
02-233	Streambank & Shoreline Hardening	RES	69,090	0	69,090	0	0
02-235	Endangered Species Review	RES	64,583	0	30,083	34,500	0
02-236	Stormwater BMP – Ship Canal	RES	35,000	0	35,000	0	0
02-237	Salmon Behavior at Ferry Docks	RES	250,000	0	125,000	125,000	0
02-238	Benefit Valuation of Stormwater Treatment	RES	75,000	0	60,000	15,000	0
00-308	Timing, Hydrology & Hydraulics Salmon Culvert Passage (Flume Test)	RES	300,000	95,846	204,154	0	0
00-311	Prey Impacts on Salmon at Ferry Terminals	RES	88,843	57,849	30,994	0	0
00-312	Modeling Hydrology for Design of Fish Passage Structures	RES	127,000	94,311	32,689	0	0

Item Number	Project Title	Funding Source	Total Project Cost	Prior Periods	Estimated 01-03	Planned 03-05	Beyond 03-05
00-313	New Channel Design for Fish Passage	RES	75,000	41,672	33,328	0	0
00-343	Light Mitigation Study of Over Water Structures	RES	39,917	17,145	22,772	0	0
00-912	Reducing Road Kill on Washington Highways	RES	25,000	0	25,000	0	0
00-952	Dry Well Pretreatment Using SPRIB	RES	129,183	46,156	83,027	0	0

**Proposed Activities
2003 – 2005 Biennium**

The projects proposed for the biennium are:

Item Number	Project Title	Funding Source	Total Project Cost	Planned 03-05	Beyond July 1, 2005
04-070	Ship Canal Stormwater Research Facility	RES	50,000	50,000	0
04-071	Particle Size Distribution and Stormwater Treatment Performance	RES	50,000	40,000	10,000
04-072	Endangered Species Listing Preparation and Response	RES	50,000	50,000	0
04-073	Low Impact Stormwater Treatment Methods	RES	75,000	75,000	0
04-074	I-90 High Priority Linkage Areas – Eastern Cascades	RES	75,000	50,000	25,000
04-075	Effect of Pile Driving on Salmonids and other Species: Study of Pressure Wave Generation During Pile Driving	RES	125,000	75,000	50,000
04-076	Improved Operations of Small Drains	RES	65,000	50,000	15,000

Estimated Costs

	2001-2003	2003 – 2005
RES	\$ 600,910	\$ 451,600
MVF	150,227	112,900
Other	<u>—</u>	<u>—</u>
	\$ 751,137	\$ 564,500

Research

Highway Design and Safety Research Area

Project Manager: J. Toohey

Objectives and Functions

Identify, investigate, and provide coordination of all research projects dealing with the design of state-owned highway systems or resulting from the engineering or operation associated with those systems.

Accomplishments 2001-2003 Biennium

Projects funded during the biennium were:

Item Number	Project Title	Funding Source	Total Project Cost	Prior Periods	Estimated 01-03	Planned 03-05	Beyond 03-05
02-240	Median Crossover Analysis	RES	85,000	0	85,000	0	0
02-241	Improving Groin Design for Streambank Protection	RES	69,000	0	69,000	0	0
00-314	Performance Evaluation of Highway Safety Features	RES	77,370	48,128	24,242	5,000	0
00-315	Assessing Economic Impact of Access Management	RES	58,109	29,124	28,985	0	0
00-316	Precipitation Estimation Update for Stormwater Design	RES	84,960	41,612	43,348	0	0
00-317	Interaction between Roadway and Roadside Accidents	RES	67,839	58,192	9,647	0	0
02-344	Studded Tire Safety	RES	33,916	0	33,916	0	0

See quarterly reports for detailed progress on each project.

Proposed Activities
2003 – 2005 Biennium

The projects proposed for the biennium are:

Item Number	Project Title	Funding Source	Total Project Cost	Planned 03-05	Beyond 03-05
04-080	Development of Low Speed W-Beam Guardrail Transiting Designs	RES	35,000	35,000	0
04-081	Effects of Ferry-induced Scour on Structures at WSF Terminals	RES	100,000	85,000	15,000
04-082	Analysis of WSDOT Highway Safety Program	RES	90,000	90,000	0
04-083	Precipitation Estimates for Eastern Washington Stormwater Designs	RES	85,000	55,000	30,000
04-084	Pedestrian/Driver Behavior and Pedestrian Safety Treatments	RES	90,000	60,000	30,000

Estimated Costs

	2001-2003	2003-2005
RES	\$ 235,310	\$ 264,000
MVF	58,828	66,000
Other	<hr/>	<hr/>
	\$ 294,138	\$ 330,000

Research

Mobility and Intermodal Planning Research Area ***Project Manager: D. Brodin***

Objectives and Functions

Identify and investigate promising methods and techniques for enhancing mobility of the state's people and products. Ensure the efficient development of transportation plans including public transit, rail, multimodal, and aviation modes.

Accomplishments 2001-2003

Projects funded during the biennium were:

Item Number	Project Title	Funding Source	Total Project Cost	Prior Periods	Estimated 01-03	Planned 03-05	Beyond 03-05
02-242	Land Use and Transportation Decision Making	RES	100,000	0	80,000	20,000	0
02-243	Understanding Land Use and Transportation Interactions	RES	90,000	0	30,000	60,000	0
02-244	Statewide Travel Time Reliability Performance Measures	RES	50,000	0	11,504	38,496	0
02-246	Economic Viability of Intermodal Truck/Rail Facilities	RES	70,000	0	40,000	30,000	0
00-324	Prioritizing Pedestrian Infrastructure Investments	RES	64,300	52,546	11,754	0	0
00-326	Freight Value Added Methodology	RES	80,000	65,721	14,279	0	0
02-388	Scoping Project: Freight Movements in Urban Areas	RES	10,000	0	10,000	0	0

Proposed Activities
2003-2005 Biennium

The projects proposed for the biennium are:

Item Number	Project Title	Funding Source	Total Project Cost	Planned 03-05	Beyond 03-05
03-090	Freight Movements Within Urban Areas	RES	40,000	40,000	0
03-091	Land Use and Transportation Investment Decision Making – Phase Three	RES	100,000	65,000	35,000
03-092	FLOW Evaluation Performance Measure Enhancements	RES	125,000	100,000	25,000
03-094	Develop Roadway Performance Measures for Trucks	RES	70,000	50,000	20,000

Estimated Costs

	2001-2003	2003-2005
RES	\$ 158,030	\$ 322,797
MVF	39,507	80,699
MMF	<hr/>	<hr/>
	\$ 197,537	\$ 403,496

Research

Construction and Materials Research Area

Project Manager: K. Anderson

Objectives and Functions

Identify, investigate, and provide coordination of research projects involving improved or new methods of testing, designing, or selecting materials or construction and operation processes for use in the transportation system.

Accomplishments 2001 - 2003 Biennium

Projects funded during the biennium were:

Item Number	Project Title	Funding Source	Total Project Cost	Prior Periods	Estimated 01-03	Planned 03-05	Beyond 03-05
02-226	Pavement Maintenance Integration into WSPMS	RES	150,000	0	70,000	80,000	0
02-228	Bucoda Test Section	RES	70,300	0	10,000	60,300	0
02-229	Accelerated Testing of Dowel Bars	RES	11,002	5,811	5,191	0	0
02-232	Liquefaction Hazards II	RES	200,000	0	140,000	60,000	0
98-266	Assessment of WSDOT Quality Assurance	RES	117,450	117,338	112	0	0
98-275	FACT – Accelerated Pavement	RES	72,199	65,760	6,439	0	0
00-327	EVERCALC II	RES	75,000	4,062	47,000	23,938	0
00-328	Assessment of Highway Roughness	RES	102,500	60,111	42,389	0	0
00-329	Evaluation of Liquefaction Hazards I	RES	170,000	131,178	38,822	0	0
00-330	Measures of Concrete Durability	RES	118,740	108,860	9,880	0	0

Item Number	Project Title	Funding Source	Total Project Cost	Prior Periods	Estimated 01-03	Planned 03-05	Beyond 03-05
00-331	Infiltration of Runoff Retention Ponds	RES	129,032	119,040	9,992	0	0
00-332	Modification of EVERFE Program	RES	75,000	61,405	13,595	0	0
00-333	Pavement Construction Case Studies on CD	RES	174,827	26,301	148,526	0	0
00-345	PCCP Slurry Disposal Analysis	RES	74,903	0	35,000	39,903	0

**Proposed Activities
2003 – 2005 Biennium**

The projects proposed for the biennium are:

Item Number	Project Title	Funding Source	Total Project Cost	Planned 03-05	Beyond July 1, 2005
04-060	Calibration of the NCHRP 1-37A Design Guide (Pavement Analysis and Design System)	RES	100,000	50,000	50,000
04-061	Development and Implementation of a Contractor Quality Control Program for Hot Mix Asphalt	RES	50,000	10,000	40,000
04-062	Enhancements to WSPMS for Network Analysis	RES	100,000	25,000	75,000
04-063	Rapid Construction – Case Histories	RES	50,000	50,000	0
04-064	Capacity Analysis of Large Diameter Drilled Shafts with Defects	RES	45,000	45,000	0
04-065	Washington State 50 Year PCCP Design and Construction	RES	100,000	50,000	50,000
04-066	Liquefaction Hazards Phase III	RES	200,000	90,000	110,000

Estimated Costs

	2001-2003	2003-2005
RES	\$ 461,557	\$ 467,313
MVF	115,389	116,828
Other	<u>—</u>	<u>—</u>
	\$ 576,946	\$ 584,141

Research

Highway Operations: Maintenance, Traffic and ITS Research Area ***Project Manager: D. Brodin***

Objectives and Functions

Coordinate and administer all research activities intended to enhance traffic and intermodal transportation operations, with particular emphasis being placed on ITS and other advanced technologies.

Accomplishments 2001-2003 Biennium

Projects funded during the biennium were:

Item Number	Project Title	Funding Source	Total Project Cost	Prior Periods	Estimated 01-03	Planned 03-05	Beyond 03-05
03-104	Freeway Flow Analysis Using Existing Data Archive	RES	100,000	0	100,000	0	0
02-247	Highway Performance Measurement Data	RES	218,000	0	218,000	0	0
02-248	Quantitative Use of Existing Video	RES	150,000	0	150,000	0	0
02-249	Improved Web-Based Travel Information	RES	75,000	0	75,000	0	0
02-250	Documentation of User/Agency Benefits for Information-based ITS Strategies	RES	52,000	0	0	52,000	0
02-251	AVL Speed Probes	RES	100,000	0	100,000	0	0
98-261	Transit Vehicles as Probes	RES	215,000	203,143	11,857	0	0
98-273	Statewide Urban and Rural Safety Initiative	RES	85,223	85,122	101	0	0
00-335	RWIS – Road Weather Information Benefit Cost Study	RES	39,038	27,182	11,856	0	0

Item Number	Project Title	Funding Source	Total Project Cost	Prior Periods	Estimated 01-03	Planned 03-05	Beyond 03-05
00-337	Coordinated Arterial Signal Control and Freeway Ramp Metering	RES	25,505	9,564	15,941	0	0
00-338	Using Existing Video Equipment for Speed Congestion Data	RES	150,000	140,006	9,994	0	0
00-340	Use of Mobilizer Video Data to Calibrate Speed and Travel Time Models	RES	18,726	18,187	539	0	0
00-341	Freeway Congestion Prediction Model Feasibility	RES	75,000	68,309	6,691	0	0
00-346	Temporary Traffic Management Systems	RES	1,299	0	1,299	0	0
00-347	Land Surface Model for Prediction of Pavement Temperatures	RES	90,000	1,036	88,964	0	0
02-348	Automata Model for Congestion Prediction (Phase 2)	RES	75,000	0	75,000	0	0
00-931	Reflectivity of Pavement Markings	RES	25,000	12,102	10,000	2,898	0

**Proposed Activities
2003- 2005 Biennium**

The projects proposed for the biennium are:

Item Number	Project Title	Funding Source	Total Project Cost	Planned 03-05	Beyond July 1, 2005
04-100	Public Reaction to Construction Related Traffic Congestion	RES	50,000	40,000	10,000
04-101	Improved Dual Loop Derived Truck and Speed Data	RES	90,000	60,000	30,000
04-102	Improved Video-derived Truck and Speed Data	RES	90,000	60,000	30,000

Item Number	Project Title	Funding Source	Total Project Cost	Planned 03-05	Beyond July 1, 2005
04-103	Quantitative Use of Existing Video Equipment – Final Phase	RES	150,000	100,000	50,000
04-105	Prediction of Weather Elements and Impact on Congestion/Incidents	RES	130,000	80,000	50,000
04-106	WSDOT Arterial Signal System Data Collection Specification	RES	30,000	30,000	0
04-107	AVL Equipped Vehicles as Probes – Final Phase	RES	125,000	100,000	25,000
04-108	Development of Congestion Prediction Models – Final Phase	RES	75,000	60,000	15,000

Estimated Costs

	2001-2003	2003-2005
RES	\$ 700,194	\$ 467,918
MVF	175,048	116,980
MMF	<hr/>	<hr/>
	\$ 875,242	\$ 584,898

Research

Special Projects and Administration Research Area

Project Manager: L. Oman

Objectives and Functions

Coordinate and administer all research activities by and for WSDOT. Maintain continuing surveillance on transportation-related research throughout the nation and the world. Promote implementation, transfer of technologies, and application of pertinent research findings. Conduct investigations into emerging problems encountered by regions, cities, counties, or the executive staff of WSDOT.

Accomplishments 2001-2003 Biennium

Workshops and seminars on technical topics of emerging interest in research and innovation were held, involving the private sector, FHWA, WSDOT technical and management staff, and students and researchers from Washington universities.

The office continued developing working relations with other state and federal agencies for the formal and informal sharing and coordination of research in the areas of common interest and concern. The working relationships that have been established or are continuing include the US Department of Energy's Pacific Northwest National Laboratories and the University of California's Pavement Research Center.

Research projects are underway which are using contributions from the US Geological Survey, US Forest Service, US Army Corps of Engineers, Washington Department of Fish and Wildlife, University of Washington, and the Oregon, Alaska, Texas, California, and Minnesota Departments of Transportation.

State led pooled fund projects have been established under WSDOT's lead in the areas of investigating cable mesh rock fall protection, dowel bar retrofit techniques, mechanically stabilized earth wall stability, pavements, salmon passage through flumes, and simulation software for constructability analysis.

Item Number	Project Title	Funding Source	Total Project Cost	Estimated 01-03	Planned 03-05
02-190	Research Administration	RES	957,454	957,454	0
02-192	TRB Correlation Service	RES	108,205	108,205	0
02-193	Research & Technology Seminars	RES	55,000	55,000	0

Item Number	Project Title	Funding Source	Total Project Cost	Estimated 01-03	Planned 03-05
02-194	TRAC Program Development	RES	60,000	60,000	0
02-195	TRAC Special Programs	RES	115,000	115,000	0
02-196A	TRAC Support (UW)	MVF	60,000	60,000	0
02-196B	TRAC Support (WSU)	MVF	71,208	71,208	0
02-198	Research Implementation	RES	112,000	112,000	0
02-945	Multimodal Investment Choice Analysis (MICA)	MMF/RES	385,540	133,409	0
02-951	Strategic Freight Transportation Analysis	MVF	500,000	440,000	60,000

**Proposed Activities
2003-2005 Biennium**

During the 2003-2005 biennium the Research Office plans to hold its peer exchange in compliance with the federal requirement. These costs are included in the Research Administration work item.

The Office will continue to enhance WSDOT's active involvement in the development of a national research agenda through AASHTO's Research Advisory Council and the Subcommittee on Research.

The Office will continue to place emphasis on the timely implementation of projects as they are completed and the follow up of previously completed projects.

The Research Office will provide assistance to Washington State University in administering the direct federal grant they have received for structures research.

State led pooled fund projects will be pursued for topics of interest to WSDOT and other states.

Item Number	Project Title	Funding Source	Total Project Cost	Planned 03-05	Beyond July 1, 2005
04-110	Research Administration	RES	1,283,949	1,283,949	0
04-111	TRB Correlation Service	RES	108,205	108,205	0
04-112	Research and Technology Seminars	RES	60,000	60,000	0
04-113	TRAC Program Development	RES	80,000	80,000	0

Item Number	Project Title	Funding Source	Total Project Cost	Planned 03-05	Beyond July 1, 2005
04-114	TRAC Special Programs	RES	115,000	115,000	0
04-115A	TRAC Support (UW)	MVF	60,000	60,000	0
04-115B	TRAC Support (WSU)	MVF	60,000	60,000	0
04-116	Quick Response Task	MVF	200,000	200,000	0
04-117	Research Implementation	RES	115,000	115,000	0

Estimated Costs

	2001-2003	2003-2005
RES	\$ 1,152,854	\$ 1,409,723
MVF	852,740	732,431
MMF	<u>106,682</u>	<u>—</u>
	\$ 2,112,276	\$ 2,142,154

Research

Commitments to Pooled Fund Projects

Federal Project Number	Project Title	Lead State	Estimated Obligation for 01-03	Planned Obligations for 03-05
SPR-3 (072)	Strength and Deformation Analysis of Mechanically Stabilized Earth Walls at Working Loads	WA	60,000	60,000
SPR-3 (074)	Pavement Research and Technology	WA	30,000	30,000
SPR-3 (087)	Lateral Load Field Tests on Pile Groups, Phase 3	UT	15,000	0
SPR-3 (095)	Vehicle Highway Automation Systems	CA	50,000	25,000
SPR-3 (096)	Fish Passage Capability Through Modified Culverts – Flume Passage Research	WA	300,000	0
TPF-5 (010)	Structural Improvement of Flexible Pavement Using Geosynthetics for Base Course Reinforcement	ME	10,000	
TPF-5 (017)	WASHTO-X Technology Transfer Initiative	UT	20,000	20,000
TPF-5 (018)	Evaluation of the Influences of Asphalt Binder on Mixture Fatigue	AZ	15,000	
TPF-5 (029)	High Occupancy Vehicle Systems	FHWA	40,000	0
TPF-5 (035)	Pacific Northwest Snowfighters	WA	20,000	20,000
TPF-5 (039)	FWD Calibration Centers and Operational Improvements	FHWA	10,000	20,000
TPF-5 (046)	Transportation Curriculum Coordination FHWA Council Training Management and Development	FHWA	10,000	10,000
TPF-5 (052)	Transportation Management Center Study	FHWA	50,000	0
TPF-5 (060)	Comprehensive Highway Safety Improvement Model (CHSIM)	FHWA	30,000	20,000
TPF-5 (402)	National Cooperative Highway Research Program 2002	FHWA	555,195	0
TPF-5 (403)	National Cooperative Highway Research Program 2003	FHWA	493,453	0
TPF-5 (404)	National Cooperative Highway Research Program 2004	FHWA		534,490
TPF-5 (405)	National Cooperative Highway Research Program 2005	FHWA		570,625
Total			1,708,648	1,310,115

Management of the Planning and Research Work Program

Work Program Development

WSDOT's biennial budget process defines the policy direction for the planning and research work program and identifies priorities for planning and research activities during the biennium. This policy direction includes funding levels, source of funds, and, in some instances, guidance as to project scope.

The Division Services Office will provide detailed instructions to all project managers on format and key dates for completing the work program and associated updates. These instructions will also include target dollar allocations for each office to use in developing their portions of the work program.

Based on the program objectives and specific instructions as described above, individual projects will be defined by project managers within the target dollar allocations provided to them. Required information includes scope, objectives, funding source(s), previous accomplishments, and proposed activities for each project. Any planned use of contracts with other agencies or private consultants should be specifically identified as well as any special purpose equipment to be purchased with federal funds. A project manager must also be identified for each project submitted. The format for submitting the above information for inclusion in the work program is shown in Attachment 1.

The Division Services Office will prepare a draft copy of the work program as submitted for review by WSDOT management and FHWA Division staff. The draft will include a fiscal summary of estimated available federal funding along with a summary of project costs for each item included in the work program. A final draft of the work program incorporating any changes from this review plus any legislative decisions will then be submitted to FHWA for final review and approval, along with the required obligation documents for the federal funds programmed.

It is anticipated that the instructions for work program development will be distributed to project managers in April, that FHWA review will occur in May, and that the final work program proposal will be submitted to FHWA for approval by June 15.

Program Financing

The state Legislature provides state and federal appropriation authority for the planning and research program on a biennial basis, from July 1 to June 30 of odd-numbered years. The state appropriation is used to match the federal funds available as well as provide for a certain level of nonfederal expenditures. The federal appropriation establishes a limit for federal expenditures for SPR funds based on estimates of these funds available for the biennium. This limit can be increased if more federal funding becomes available than was anticipated at the time of the biennial appropriations, with a corresponding decrease to the state funds appropriation. However, this must be approved before any expenditure of additional funds can be made. The federal appropriation can also be increased when other unanticipated federal funds become available through supplemental appropriations or unanticipated receipts. Supplemental appropriations are made by the Legislature; unanticipated receipts are approved by the

Office of Financial Management through the Finance and Administration Division. When the availability of additional federal funds becomes known, project managers should notify the Division Services Office to start the approval process.

Because the federal fiscal year does not begin until October 1 and new apportionments are not available until that time, the WSDOT will reserve enough of the prior federal fiscal year's apportionment to finance the new work program for the first three months of each state fiscal year. Additional obligation documents will be submitted to FHWA when additional federal funds become available to fully finance the approved work program.

The work program will be built within the appropriation levels established by the Legislature. The draft work program reviewed by FHWA in May will be based on the Department's budget request to the Legislature. The final work program submitted to FHWA in June will, if possible, reflect the appropriation levels and priorities as passed by the Legislature. WSDOT needs to have an approved work program in place by July 1 in order to proceed with business as usual. If timing does not allow for the final work program to be adjusted for legislative decisions, then the first update that is prepared will reflect the required legislative changes.

FHWA Annual Work Program Approval Criteria

Projects proposed for FHWA funding must be eligible for federal participation and must be consistent with the policy direction defined by the budget process.

Necessary WSDOT actions include timely submittal of the program, consideration of FHWA recommendations and satisfying any conditions which may be stated in the letter of approval. FHWA comments will be forwarded to the project managers for review and action.

Management of the Work Program

Designated project managers are responsible for carrying out projects according to the objectives, scope, and funding in the approved work program. They are also responsible for addressing any recommendations or concerns of FHWA regarding their project.

The Division Services Office will assist managers in monitoring project funding by providing a monthly financial report showing planned and actual expenditures for individual projects, individual offices, and for the total program.

There will be three status reports prepared for submittal to FHWA for the biennial work program. For the purpose of these reports, "significant" deviations will include those which are 5% or \$20,000, whichever is greater, above or below the current approved cost estimates.

1. The first report will be an informal update, not requiring FHWA approval, but providing current estimates of cost for each project and explanations for changes

which are significantly different from the original approved work program. This report will be submitted for the first six months of activity.

2. The second status report will require approval by FHWA. This report will describe the activity for each project for the first year of the work program and comment as to scope, schedule and funding. Current estimates of cost as well as explanations for significant changes will also be provided.
3. The third report will also be an informal update, similar to the first, but providing cost estimates through 18 months.

The Division Services Office will provide the necessary instructions to the project managers at the time each of the above reports are to be submitted. It is the responsibility of the managers to provide the necessary explanations and cost estimates which form the basis of the reports.

In addition, the preparation of the ensuing biennium's work program includes a statement of previous biennium accomplishments as well as the current estimate of cost. Any significant variations between the third status report above and what is reported in the new work program must also be explained in that document.

Revisions – Changes in Scope or Funding

As work proceeds throughout the biennium, the need to update approved projects in the biennial work program for changes in scope and funding will occasionally arise. In addition, emerging issues may require the addition of a new project or deletion of a currently approved project. Finally, project staffing may shift from WSDOT staff to staff of another agency or a private consultant.

Scope Changes

Major changes in project scope, such as the elimination or addition of a significant product, a delay of more than four months in project completion, or the elimination of a significant user of the product, should be addressed in the semiannual status reports, even if there is no associated change in cost.

Funding Changes

The three status reports discussed in the previous section provide the basis for addressing most cost changes to the work program that do not involve a change in scope. However, two situations may require prior federal approval. If a work item in the original work program was approved as a federal nonparticipating item, then to change this item to participating would require federal approval before the change is made. The reverse of this, changing a previously approved work item from participating to nonparticipating, requires approval only if we will not be accomplishing the work using other funding.

Addition or Deletion of Projects

With the exception of research studies, the addition of a new item to the work program, which will use federal planning and research funds requires FHWA approval before the

work is begun. The Division Services Office must also assure that sufficient appropriation authority for federal and other funding is available to fund the new project and that it is in compliance with legislative commitments. The project manager will submit a project description and cost estimate to the Division Services Office. This office is then responsible to request federal approval, if necessary.

Similarly, any deletion of a previously approved work item from the work program will require prior approval of FHWA, if federal funds are involved.

Discretionary Planning Studies

The amount set aside, if any, for participating discretionary planning studies will be identified in the biennial work program. Detailed plans for a specific study will then be submitted to and approved by FHWA before any work is begun.

Close-Out Procedures

A final report will be submitted to FHWA after all costs for the biennium are known. This report will show the final costs for each project and explanations for significant deviations from the latest approved program, which will normally be the prior biennium estimated costs included in the work program submittal for the succeeding biennium. In addition, if the project accomplishments or scope are different from what was presented as prior biennium accomplishments in the succeeding biennium's approved work program, this must also be addressed in the final report. When approval of this final report is received from FHWA, the Accounting Services Office will prepare the final voucher and close out the federal projects associated with the work program. Preparation of the final report and close-out of associated work orders and agreements will be coordinated by the Division Services Office.

Special Considerations

Contracting

Agreements with private consultants or other third parties to accomplish all or part of a specific work item do not require FHWA approval, provided that approved WSDOT contracting procedures have been followed.

Equipment

Normally, equipment is maintained and replaced by the Transportation Equipment Fund (TEF) and paid for by work program items through established and approved rental rates. Office equipment, such as desks, chairs, calculators, etc., are not usually charged to the work program, but are rather purchased with nonparticipating (state) funds.

Equipment purchased specifically for the performance of a work item may be charged directly to that work item if the equipment has a useful life of less than one year or a unit cost of less than \$5000. The Division Services Office must be notified of any planned purchases for equipment having a useful life of greater than one year and a unit cost of more than \$5000 which will use federal funds, and which are not part of the current approved work program. These items require federal approval prior to purchase.

ADP Hardware or Software

Hardware or software needed for specific planning, research, development and technology transfer projects is eligible for federal participation. This does not include level playing field hardware or software or that used to support routine administrative activities.

Final Products

If a participating work item is to produce a final product, such as a report, area transportation plan, or feasibility study, submission of the final product to FHWA is required. It is the responsibility of each office manager to see that this happens. A copy should also be sent to the Division Services Office.

Research Projects

The above procedures apply to Planning projects and to non study tasks in the Research program, such as administration and research implementation.

Research projects will be programmed within the policy direction and funding limitations described in the Work Program Development Section. However, project selection and program management will be conducted in accordance with the procedures set forth in the WSDOT Research Procedures Manual. To obtain special project funding not included in the approved budget or work program, the procedures in the Program Financing Section must be followed and the necessary approvals obtained before work is begun.

Attachment 2 shows the format for inclusion of research projects in the biennial work program.

PL Funds

PL funds are transferred to the Federal Transit Administration (FTA) to be administered along with FTA planning funds as Consolidated Planning Grants.

The PL funds are allocated to the Metropolitan Planning Organizations in the State according to an approved allocation formula. This formula allocates \$30,000 to each MPO as a base amount, then allocates the remaining PL funds based on urbanized area population adjusted by a factor of 1.2 for non-attainment areas. Because the state fiscal year begins on July 1 and the federal fiscal year begins on October 1, one fourth of the prior federal fiscal year PL apportionment is reserved to cover the period between July 1 and September 30. An estimate is made for PL funds expected to be received on October 1, and the reserved amount plus three fourths of the estimate is provided to the MPOs for their use in developing work programs. When the actual apportionment is known, final allocations are made to the MPOs.

Attachment 3 shows the necessary actions involved concerning the MPOs and management of PL funds as well as FHWA/WSDOT responsibilities regarding each item.

General

This document will be reviewed at the beginning of every cycle of work program preparation. Any necessary changes will be proposed and approved at that time.

Attachment 4 shows the key time frames involved in work program preparation and management.

Attachment 5 shows the responsibilities of the offices involved in work program preparation and management.

Attachment 1

Project Scope and Cost

Category

Project (Work Item) Title

Item Number

Project Manager

**Objectives
and Functions**

**Accomplishments
Prior Biennium**

**Proposed Activities
New Biennium**

Estimated Costs

	Prior Biennium	New Biennium
SPR	\$	\$
MVF		
Other	<hr/>	<hr/>
	\$	\$

Attachment 2

Research Projects

Category of Research Area
Project Manager

**Objectives
and Functions**

**Accomplishments
Prior Biennium**

Projects funded during the biennium were:

Item Number	Project Title	Funding Source	Total Project Cost	Estimated Prior Biennium	Planned Next Biennium
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See quarterly reports for detailed progress on each project.

**Proposed Activities
Next Biennium**

The projects proposed for the biennium are:

Item Number	Project Title	Funding Source	Total Project Cost	Estimated Next Biennium	Beyond Next Biennium
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Estimated Costs

	Prior Biennium	Next Biennium
RES	\$	\$
MVF		
Other	<hr/>	<hr/>
	\$	\$

Attachment 4

Key Dates for Work Program Management

Odd-Numbered Years:

January	Prepare and submit third quarter update of work program to FHWA
April	Next biennium work program development instructions and target allocations to managers Managers develop and provide input for work items
May	Prepare draft work program for office manager's review Review draft work program with FHWA staff
May/June	Revise work program based on FHWA review and legislative decisions
June 15	Submit work program to FHWA for approval
July 1	Work program approved by FHWA
October	Obligate additional apportionment received for work program

Even-Numbered Years:

January	Prepare and submit first quarter update of work program to FHWA
Feb/March	Develop budget guidelines, policy direction for ensuing biennium
July	Prepare current biennium work program update and report to submit to FHWA for approval
October	Obligate additional apportionment received for current biennium work program

Attachment 5

Office Responsibilities in Work Program Management

Project Managers:

Define work items and prepare work item budgets

Carry out projects in accordance with objectives, scope, and funding. Meet federal requirements

Explain variances between approved budget amounts and expenditures

Inform Division Services to request approval for changes, when necessary, or if additional federal funds become available

Address FHWA concerns or recommendations regarding performance of work items

Stay within approved allocations

Provide final products to FHWA and obtain approval, as necessary

Division Services Office:

Prepare and submit to FHWA the biennial work program and required status reports

Obligate federal funds

Provide instructions to project managers for work program and status report preparation, including target allocations

Request FHWA approval, when necessary for work program changes

Schedule reviews with FHWA staff; address FHWA concerns or recommendations regarding work program format or federal participation

Provide monthly financial report to managers

Prepare final report and coordinate close-out of associated work orders and agreements

FHWA:

Review and approve biennial work program, mid-biennium update, and revisions to work items, as necessary

**Washington State Department of Transportation
2003 – 2005 Work Program
Glossary of Acronyms**

Acronym:	Stands For:
AASHTO	Association of State Highway and Transportation Officials
ADA	Americans with Disabilities Act
ARM	Accumulated Route Miles
AVC	Automated Vehicle Control
AVI	Automatic Vehicle Identification
CARS	Collision Analysis Records System
CLAS	Collision Location and Analysis System
CMS	Congestion Management System
CPG	Consolidated Planning Grant
CPMS	Capital Program Management System
CRASH	Collision Reporting and Statistical History
CTAA	Community Transit Association of America
CTR	Commute Trip Reduction
DCTED	Department of Community Trade and Economic Development
DLG	Digital Line Graph
EA	Environmental Assessment
EDC	Economic Development Council
EIS	Environmental Impact Statement
ERP	Expert Review Panel
FAME	Freeway Arterial Management Effort
FGTS	Freight and Goods Transportation System
FHWA	Federal Highway Administration
FRA	Federal Railroad Administration
FTA	Federal Transit Administration
GIS	Geographic Information System
GP	General Purpose
GPS	Global Positioning System
HAL/HAC	High Accident Location/High Accident Corridor
HCT	High Capacity Transit
HELP	Heavy Truck Electronic License Plate
HOV	High Occupancy Vehicle
HPMS	Highway Performance Monitoring System
HSIP	Highway Safety Improvement Projects

IAWG	Interagency Work Group
IMS	Intermodal Management System
ISTEA	Intermodal Surface Transportation Efficiency Act
ITS	Intelligent Transportation System (replaced IVHS)
IVHS	Intelligent Vehicle Highway System
LRS	Linear Referencing System
LTPP	Long Term Pavement Performance
LTC	Legislative Transportation Committee
MIA	Major Investment Analyses
MIS	Management Information Systems
MMF	Multimodal Fund
MMIS	Major Metropolitan Investment Studies
MPO	Metropolitan Planning Organization
MVET	Motor Vehicle Excise Tax
MVF	Motor Vehicle Fund
NCHRP	National Cooperative Highway Research Program
O & D	Origination and Destination
O & M	Operation and Maintenance
PMS	Pavement Management System
PT&R	Public Transportation and Rail Division
PTSA	Public Transportation Systems Account
RAAD	Rapid Availability Accident Data
RCW	Revised Code of Washington
RDP	Route Development Planning
RTA	Regional Transit Authority
RTAP	Rural Transit Assistance Program
RTID	Regional Transportation Investment District
RTPO	Regional Transportation Planning Organization
SEPA	State Environmental Policy Act
SHRP	Strategic Highway Research Program
SOV	Single Occupancy Vehicle
SPR	State Planning and Research
STIP	Statewide Transportation Improvement Program
STP	Surface Transportation Program
SWIBS	State of Washington Inventory of Bridge Systems
TAC	Technical Advisory Committee
TARIS	Traffic, Accident and Roadway Information System
TCM	Traffic Control Measures
TDM	Transportation Demand Management
TIB	Transportation Improvement Board
TIP	Transportation Improvement Program

TMA	Transportation Management Area
TRAC	Transportation Research Center
TRB	Transportation Research Board
TRIPS	Transportation Information and Planning Support System
TRIS	Transportation Research Information System
TSM	Transportation System Management
UPWP	Unified Planning Work Program
UW	University of Washington
VMT	Vehicle Miles Traveled
WAC	Washington Administrative Code
WATS	Wenatchee Area Transportation Study
WIM	Weigh In Motion
WINGS	Washington Information Network GIS System
WSDOT	Washington State Department of Transportation
WSP	Washington State Patrol
WSU	Washington State University
WTP	Washington's Transportation Plan
WTSC	Washington Traffic Safety Commission